

Gifted and Talented Homework: Catherine Walkear

Short-term Scheme of Work: Year 7 Science Topic 7D – Variation and Classification

LESSON NUMBER	LESSON TITLE	Remembering Recognising Listing Describing Identifying Retrieving Naming Locating Finding	Understanding Interpreting Exemplifying Summarising Inferring Paraphrasing Classifying Explaining	Applying Implementing Carrying out Using Executing	Analysing Comparing Organising Deconstructing Attributing Outlining Structuring Integrating	Evaluating Checking Hypothesising Critiquing Experimenting Judging Testing Detecting Monitoring	Creating Designing Constructing Planning Producing Inventing Devising Making
1	All the Same?	know differences between living things is called variation. • know if there are enough differences between organisms, they are different species. • recognize that here is variation between the members of a species. • know some variations are inherited Activity D1a – Spot the Species D1 Plenary – matching words and definitions					

	Bloom's Differentiation	<p>State the definition of species. List the features used to classify frogs Features used to classify frogs</p> <p>Know how to write the scientific names of <i>Litoria ewingi</i> and <i>Litoria paraewingi</i></p> <p>Describe three ways in which they are similar/different</p>	<p>Listen to the calls of these frogs and deduce whether they would be members of the same species</p> <p>Listen to Litoria ewingi</p> <p>Listen to Litoria paraewingi</p> <p>Why might it be difficult to tell if two organisms belong to the same or to two different species?</p>	<p>Frogs need to jump to catch their prey mid flight!</p> <p>Who can do the longest frog jump???</p>	<p>Construct a table that compares these two frogs.</p> <p>Do their territories overlap on the map?</p> <p>Would you expect to find them in the same location?</p> <p>How do you think their calls will compare if they are found overlapping</p>	<p>Explore local ponds/waterways to see if you can detect any local species of frogs:</p> <p>If you can hear any frogs, use your iPhone to record the calls.</p> <p>Triangulate its position with a friend, and then once you think you have located it, play the recording back to it.</p> <p>It will come out to see who's invading its territory!</p> <p>OR</p> <p>Evaluate the benefit of programmes like Frogwatch</p> <p>How can we improve the waterways for our frogs??</p>	<p>Create a frogarium</p> <p>OR</p> <p>Answer 'I would rather be a frog than a toad because...'</p> <p>OR</p> <p>Why is the Cane Toad so hated in Australia?</p>
2	Do Big People have Big Feet?	<ul style="list-style-type: none"> plan and carry out an investigation to compare variations between members of the class. identify and control relevant variables use equipment to collect appropriate data 	<p>D1b Activity Sheet</p> <p>Discuss variables</p> <p>Plan procedure and design results table</p> <p>Collect data (can use a spreadsheet)</p>			<p>Meter rulers</p> <p>Laptops if using a spreadsheet</p>	
3	Do Big People have Big Feet?	<ul style="list-style-type: none"> produce a scattergraph form a conclusion evaluate the strength of the evidence and consider sample size 	<p>Process data – plot a scatter graph (by hand or use a spreadsheet)</p> <p>Write conclusion and evaluation</p>			Laptops if using a spreadsheet	
4	Differences Count	<ul style="list-style-type: none"> understand individuals are like their parents but they are not identical to them. recognize that environmental differences can result in variations in a species. recognize some variations are a combination of both inherited and environmental causes 	<p>D2 Starter Sort features into whether they are inherited, environmental or both</p> <p>D2a Life in the Shade – collecting and comparing leaves from sunny/shady sites</p>			<p>Rulers</p> <p>Leaves (either provided or allow students to go out and collect own)</p>	D2 Homework

	Bloom's Differentiation		What scientific processes do scientists use to investigate whether variation is due to genetics or environment or both?	How does skin colour vary in populations? How does skin colour help humans survive? How much is it affected by genetics and how much by environment? Discuss the example of Michael Jackson's cosmetic change of skin colour? Is it OK to want to change?	Analysis	Evaluate the risks of tanning salons, and skin whitening creams. Why all the fuss? Is there a better use of your money?	'Too much of a good thing?' Create an ad campaign to persuade people to protect their skin from excessive sun burn.
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5	Differences Count/ alternative activity	<ul style="list-style-type: none"> understand individuals are like their parents but they are not identical to them. recognize environmental differences can result in variations in a species. recognize some variations are a combination of both inherited and environmental causes 	D2b Activity – comparing fingerprints			Ink pad Plain paper Laptop for spreadsheet	
6	Sorting Living Things	<ul style="list-style-type: none"> explain the importance of classifying living things identify living things as animals, plants, microorganisms and fungi and describe some features of these explain how animals are subdivided into vertebrates and invertebrates explain why a bacteria cannot be classified as a plant or an animal 	D3 Special Wordsearch Students sort cards of different organisms using their own grouping criteria P40 Text Bk – actual classifications Draw a table and correctly classify organisms P41 Text Bk Introduce vertebrates and invertebrates, Qs 2 - 5			Laminated cards of organisms	

	Bloom's Differentiation	List the main features of each of the 5 Kingdoms of living organisms	Why are viruses not considered to be alive? Give 3 reasons, and refer to the characteristics of living things	Draw and label 3 micro-organisms. How do we tell them apart? Grow a fungus and look at it under the microscope. Draw a biological diagram. Look at the drawings of Anton von Leeuwenhoek, who made the most powerful microscopes of the 17 th century. How did his application of his lenses to the natural world contribute to our understanding of the variety of life and the inadequacies of the classification system of the day?	Which Kingdom has the <i>most</i> species in it? Which Kingdom is losing species at the fastest rate? Which kingdom has probably got the most undiscovered species? Which Kingdom can tolerate the greatest extremes of environments? Which kingdom has the most conservation \$\$ spent on it?	Where should we spend most of our conservation dollars? How do we get more \$\$ from individuals and from governments? Should people be taxed to provide conservation funds?	Design a polar c that can survive global warming! Make a poster to change people's daily habits. If people were p bears...
7 + 8	Different Groups	<ul style="list-style-type: none"> identify vertebrates as mammals, birds, reptiles, amphibians and fish and describe some features of these identify invertebrates as jellyfish, flatworms, segmented worms, starfish, roundworms, molluscs and arthropods describe how arthropods are subdivided into crustaceans, centipedes/ millipedes, spiders and insects 	<p>Introduce subgroups – Classification Tree (T drive)</p> <p>Split students into 10 groups</p> <ol style="list-style-type: none"> mammals birds reptiles amphibians fish jellyfish worms(flat, segmented, round) starfish molluscs arthropods <p>Groups research features of their given classification. Complete research rubric (T:drive) Produce a poster.</p>			<p>Classification Tree</p> <p>Research Rubric (A3)</p> <p>Media centre, laptops Poster paper</p>	Research for po
	Bloom's Differentiation	Choose two animals that Charles Darwin discovered on the Galapagos Islands: Make up 5 questions or choose 5 criteria on which to compare them. Make a poster or multimedia presentation. Recall 5 more facts about Darwin's discoveries on the islands	Look at pictures of the finches of the Galapagos Islands: Compare their beaks: Using fine forceps, coarse forceps and chopsticks, see how many chickpeas, or how many mung beans you can pick up in 60s. (Psychomotor)	Investigate how venoms from invertebrates have been used in science and the medical profession. How do you 'milk' a snake? OR Investigate how many people are killed every year by vertebrates vs invertebrates? "I would hate to be killed by a because...."	Arachnophobia?? Fear of spiders- Is it universal? Do primates fear spiders? Is it hardwired into our nervous systems??? Is there a way to overcome it? How effective is the treatment? (Affective)	Evaluate whether the presence of a backbone (vertebrate) has allowed more species to colonise extreme environments? Eg (artic/desert/deep oceans). OR Which of the vertebrates is the most widely dispersed group? (ie found in the widest range of environments)	Design a board game to teach/reinforce t principles of classification of invertebrates

9 + 10	Review and Test						
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Module 5 HW:

SCUMPS: Investigating Invertebrates: Compare the Pooter and the Magnifying Glass OR

SCUMPS: Investigating Vertebrates: Compare the iPhone and the tape recorder with external microphone







Element	Why is it important?
Size	Storage/Handling/Weight:
Colour	Visibility/Aesthetics/Marketing/Safety/Hygiene:
Uses	Home/Workplace:
Materials	Safety/Durability/Strength/Cost:
Parts	System/How do the parts go together:
Shape	Ergonomics/Aesthetics/Function/Ease of cleaning:

Module 6 HW Graphic Organisers

1. Venn Diagram to Compare Vertebrates and Invertebrates
2. Spider Diagram to Compare Arthropods
3. Organisational Chart to Classify 5 Classes of Vertebrates

Module 7: SCAMPER HW

How could you improve a mobile phone so that it can be used to classify frogs and record where they have been found?

ITEM: Mobile Phone	
 UBSTITUTE	
 OMBINE	
 DAPT	
 ODIFY	
 UT	
 LIMINATE	

R

EVERSE

Creative Problem Solving: Coal mining in the Queensland Hinterland-See article Coal Mining vs Great Barrier Reef.

1. Problem Awareness:

What is the major problem?

2. Fact finding

What facts do we have about the problem: who, what when, where, why, how?

3. Problem finding

What are the sub-problems that add difficulty to the major problem?

4. Idea finding

What are the possible solutions to the problem?

5. Solution finding

A: What objective criteria can be used to evaluate the solutions?

B:

Criteria for evaluation	Solution 1	Solution 2	Solution 3
Total			

1 point = poor; 2 points = Fine; 3 points = Good; 4 points = Very Good; 5 points = Excellent.

Acceptance Finding

What action plans should be undertaken: who, what, where, when, why, how?

Module 8 HW: Gardiner's Model of Multiple Intelligences:

My Curriculum Unit targets the Naturalist intelligence, and aims to enhance students appreciation of the importance of all living organisms in our lives and on our planet.

It includes references to the work of Charles Darwin and Anton von Leewenhoek.

It encourages students to become more aware of frogs and gives a method of recording and possibly identifying frogs in their local habitat.

It encourages the growing and observation of fungi, and comparison of the microscopic detail of these with those of other microorganisms, requiring the use of microscopes, so also includes Blooms psychomotor; as well as visual/spatial intelligence in being able to draw biological diagrams of these organisms, and appreciate the drawings of Darwin, and Leewenhoek.

42 Grid Multiple Intelligences & Bloom's Taxonomy

Eight Ways to be Gifted	Bloom's Taxonomy: Six Thinking Levels					
	Knowing	Understanding	Applying	Analysing	Evaluating	Creating
Verbal I enjoy reading, writing and speaking						
Mathematical I enjoy working with numbers & science						
Visual/Spatial I enjoy painting, drawing & visualising						
Kinaesthetic I enjoy doing hands-on activities, sports and dance.						
Musical I enjoy working with others						
Interpersonal I enjoy working with others						
Intrapersonal I enjoy working by myself						
Naturalist I enjoy being outdoors, in a natural environment						

Blooming Smarts Master Planning Matrix

	<i>Word Smart</i>	<i>Math/Logic Smart</i>	<i>Picture Smart</i>	<i>Body Smart</i>	<i>Music Smart</i>	<i>Group Smart</i>	<i>Self Smart</i>	<i>Nature Smart</i>

Remembering ➤ Recognising ➤ Listing ➤ Describing ➤ Identifying ➤ Retrieving ➤ Naming ➤ Locating ➤ Finding	<ul style="list-style-type: none"> • know differences between living things is called variation. • know if there are enough differences between organisms, they are different species. • recognize that there is variation between the members of a species. • know some variations are inherited 							
Understanding ➤ Interpreting ➤ Exemplifying ➤ Summarising ➤ Inferring ➤ Paraphrasing ➤ Classifying ➤ Explaining								
Applying ➤ Implementing ➤ Carrying out ➤ Using ➤ Executing								
Analysing ➤ Comparing ➤ Organising ➤ Deconstructing ➤ Attributing ➤ Outlining ➤ Structuring ➤ Integrating								
Evaluating ➤ Checking ➤ Hypothesising ➤ Critiquing ➤ Experimenting ➤ Judging ➤ Testing ➤ Detecting ➤ Monitoring ➤								

Creating ➤ Designing ➤ Constructing ➤ Planning ➤ Producing ➤ Inventing ➤ Devising ➤ Making								
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Tic-Tac-Toe
